dLAN®

200 AVpro mini

devolo

The Network Innovation

devolo dLAN® 200 AVpro mini

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1 Preface

1.1 Thank you for placing your trust in this devolo product

devolo dLAN professional solutions are a favourably priced option for using the power grid infrastructure in a building to establish a broadband IP network. The advantage this brings is obvious: no new cables have to be laid – expenditure and costs remain low. dLAN can be used as an easily scalable, primary network as well as to supplement an existing infrastructure.

devolo's dLAN 200 AVpro mini provides the perfect stepping stone to the professional dLAN world. With its ultra-compact, unobtrusive design, this adapter can be put anywhere. It turns any electrical socket into a network access point, ensuring complete coverage for building areas that are not equipped with electronic data processing cables.

1.1.1 About this manual

After an introduction to "dLAN" and "Green-IT" in **Chapter 2**, **Chapter 3** will cover successfully setting up your dLAN 200 AVpro mini. For information on configuring the dLAN network, please see **Chapter 4**. Statements about bandwidth optimization as well as information about product safety and environmental compatibility of the device and our warranty terms can be found in **Chapter 5**.

You can find the technical data for the dLAN 200 AVpro mini in the product information sheet on the enclosed product CD.

Description of the symbols

Here we briefly describe the meaning of the symbols used in this manual.

Very important note. Failure to observe this note may result in damage.

Important note that should be observed.

Additional information, background material and configuration tips for your device.

If you have any further ideas or suggestions related to our products, please don't hesitate to contact us at support@devolo.com!

devolo on the Internet

For detailed information on our products, visit www.devolo.com.

The area **dLAN for business projects** not only contains product descriptions and documentation, but also updates of devolo software.

We especially recommend the descriptions of the "dLAN network," which are arranged according to **Application**, **Sectors** and **Integration**, where you can find lots of interesting background information.

2 Introduction

dLAN is an intelligent, secure technology that lets you set up a home network easily, quickly and economically via your household electrical wiring, without the need for complex and expensive dedicated cabling. The available performance and effort required for the installation also compares favourably to traditional methods.

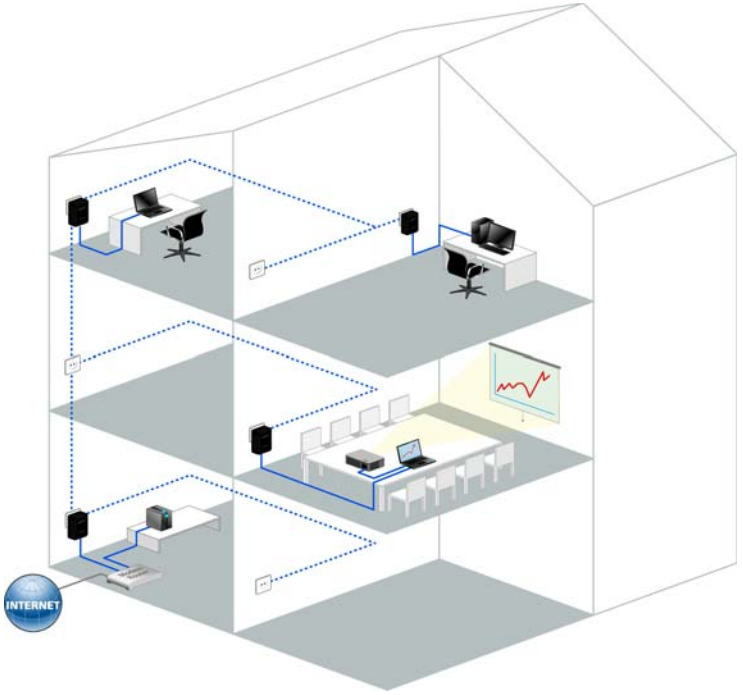


Fig. 1

2.1 What exactly is dLAN?

dLAN (direct Local Area Network) uses the household power grid to transfer data between computers equipped with suitable devices and other network components. As a result, any power outlet can be used as a network access point. The data is modulated prior to transfer and sent as a signal via household power lines. State-of-the-art technology ensures that the power and data networks do not interfere with one another. Networking via dLAN is fast and secure. The data is encrypted using a key to prevent easy interception by third parties.

2.2 devolo—Up to speed on green IT

The topic everyone is talking about is green IT. devolo has an easy solution: the energy saving mode, which comes standard with the network adapters, sets the company apart from many competitors in the IT industry.

Developers at devolo, have for a long time kept a close eye on how much power dLAN AVpro adapters may consume. After all, a devolo network via electrical sockets should not only be convenient, but also require as little energy as possible—particularly during times when it is not being used.

That devolo can satisfy the demand for energy efficiency is evidenced by the patented **energy saving mode** in the devices. **It automatically reduces the energy consumption** when the computers in the dLAN network or connected equipment are switched off.

The power saving mode in the adapters is not only a tribute to **environmental protection** but also a real service to the customer. Most people tend to forget to regularly press the standby button on the hardware. **The patented technology in devolo adapters allows you to save energy without having to do anything**. And if less energy is consumed, your electric meter will turn more slowly. In other words, every minute the adapter is in power saving mode, you will save money.

A dLAN AVpro adapter connected to a computer can only go into energy saving mode if the network card of the switched-off computer is also inactive. If you are using a network card that remains active even when the computer is switched off, we recommend connecting the computer to an on/off switch using a multiple socket so that both the computer and the integrated network card are de-energised.

If you would like to ensure that a dLAN AVpro adapter **does not switch to energy saving mode**, this function can be deactivated in the **dLAN AVpro manager** software.

In order to reactivate the function in the dLAN AVpro manager at a later point, the adapter has to first be unplugged and plugged back in.

2.3 The dLAN 200 AVpro mini

- Developed for professional use in small networks with high demands on reliability and performance
- Ideal for small office and home office as well as for small powerline installations in public facilities.
- dLAN technology from the world's market leader, developed for professional use
- Ultra-compact adapter design for flexible positioning
- Professional remote management using the devolo AVpro manager software with comprehensive configuration options
- Reliable security in public areas: PowerSave functions, LED status display and encryption button can be switched off by remote management
- 200 Mbps (gross) connection for fast data transmission via dLAN
- Optimal dLAN security with a 128-bit AES key
- Supports Quality of Service (QoS) for automatic data prioritisation
- Long range of up to 300 meters with a connection over the power line
- Patented energy-saving technology for cost-efficient operation
- Easily extended using additional dLAN AVpro adapters

2.4 All about the network

2.4.1 Internet standalone solution

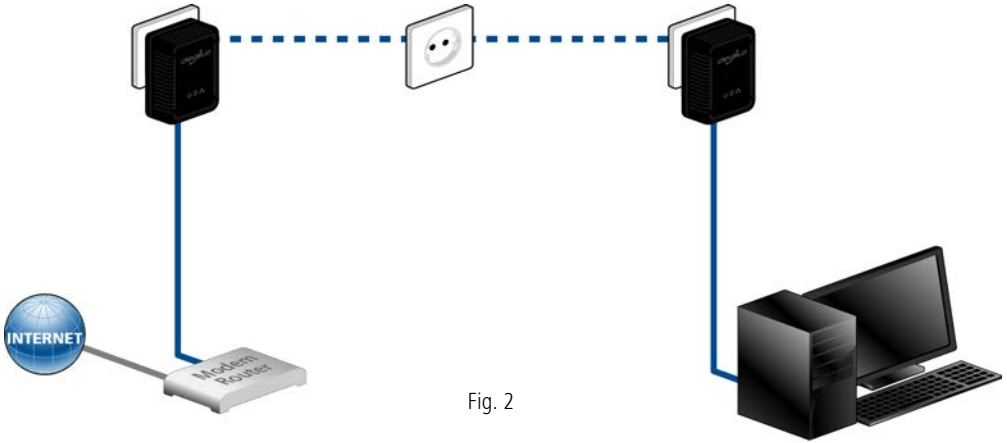


Fig. 2

2.4.2 Peer-to-peer networking and internet access

You use dLAN AVpro adapters to network devices such as computers, routers, switches, IP telephones, set-top boxes etc. over the existing power lines. In such a mode, called "peer-to-peer", all dLAN AVpro adapters installed in the network can freely exchange data with each other. All networked devices can use a centralised internet access over the dLAN 200 AVpro mini.

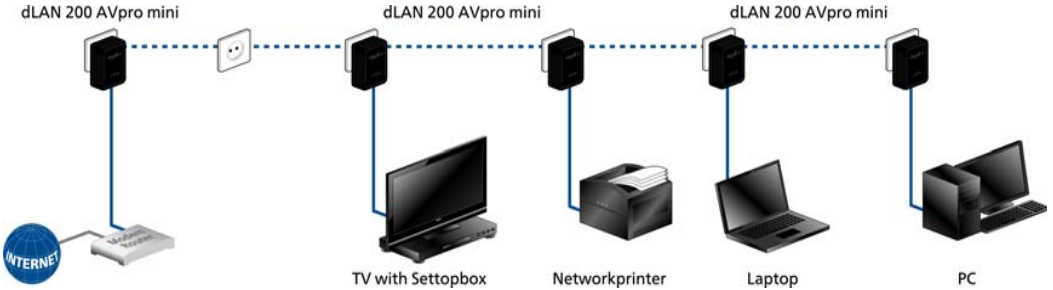


Fig. 3

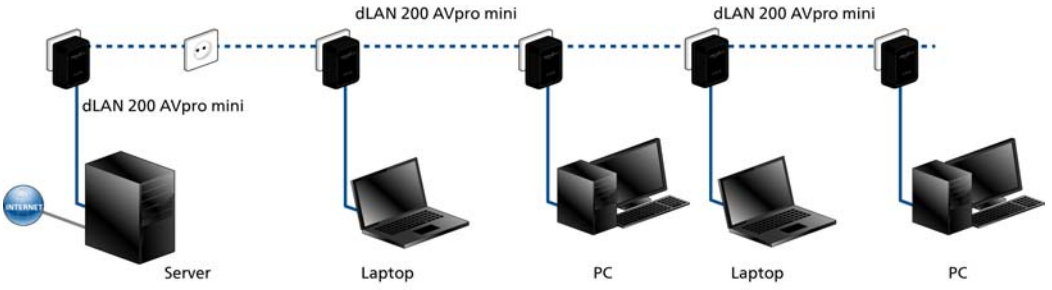


Fig. 4

2.4.3 MDU mode

Depending upon the application scenario, security considerations may mean that it is to be forbidden for all devices to exchange data freely with each other. For this purpose, a mode can be activated that realises that all dLAN AVpro adapters configured as slaves can not exchange data with each other, only with the master.

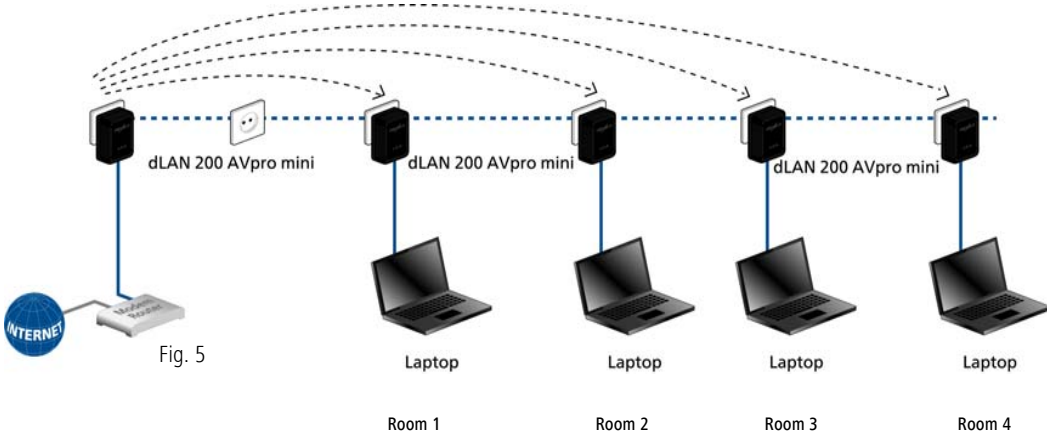


Fig. 5

3 Installation

This chapter covers everything you need to know to set up your dLAN 200 AVpro mini. It will explain connecting the device and its functions. We will also briefly introduce the included devolo software and then guide you through its installation.

Fig. 6

3.1 Package contents

Please ensure that the delivery is complete before beginning with the installation of your dLAN 200 AVpro mini.

- **Single Kit**:
  - dLAN 200 AVpro mini
  - Network cable
  - Hard copy of installation guide
  - CD containing software and documentation

or

- **Starter Kit**:
  - Two dLAN 200 AVpro mini
  - Two network cable
  - Hard copy of installation guide
  - CD containing software and documentation

devolo AG reserves the right to change the package contents without prior notice.

3.2 System requirements

- **Operating systems**: Windows XP (32-bit), Windows Vista Home Premium (32-bit/64-bit), Windows 7 Home Premium (32-bit/64-bit), Windows 8 (32-bit/64-bit), Linux (Ubuntu 8.10), Mac OS X and all operating systems with network support
- **Network connection**

Please note that your computer or other device must feature a network adapter with a network port.

To set up a dLAN network, you need at least two dLAN AVpro devices (200 Mbps or 500 Mbps).

3.3 Functions

The dLAN 200 AVpro mini features 3 control LEDs as well as a network port and an encryption button:

Power

green: Lit steady when dLAN 200 AVpro mini is ready for operation; flashes when it is in standby mode.

dLAN

green: The network connection is suitable for HD video streaming; flashes when data is being transmitted.

orange: The network connection is suitable for SD video streaming; flashes when data is being transmitted.

red: The network connection is suitable for simple data transfer and Internet access; flashes when data is being transmitted.

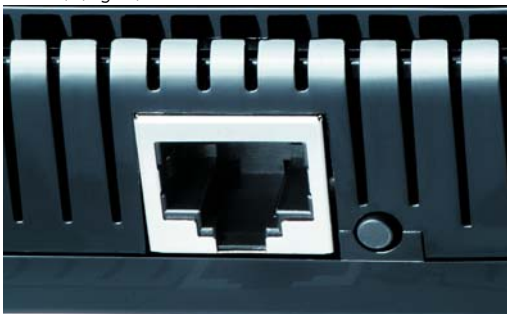
Ethernet

green: A 100 Mbps or 10 Mbps connection to the Ethernet network exists; flashes when data is being transmitted.

The function of the LED status display can be deactivated in the dLAN AVpro manager software.

Network connection

This is the connection point on the dLAN 200 AVpro mini for connecting it to a computer or another network device with the network cable (included) (Fig. 7).



Encryption button

Data encryption at the touch of a button; For more information on the functions of the encryption button, please see the chapter **4.2 dLAN network encryption at the touch of a button**.

For safety reasons, you can deactivate the encryption button in the dLAN AVpro manager software.

Standby mode

A dLAN AVpro device switches to Standby mode after a short while if no active network device such as a com-

puter is connected to the network port. **In Standby mode, the dLAN AVpro device cannot be accessed via the power supply grid**. As soon as the network device (e.g. computer) connected to the network interface is switched on again, your dLAN AVpro device can also be reached again via the electrical wiring.

If you would like to ensure that a dLAN AVpro adapter **does not switch to energy saving mode**, this function can be deactivated in the **dLAN AVpro manager** software. More information concerning "energy saving mode" can be found in the chapter **2.2 devolo—Up to speed on green IT**.

In order to reactivate the function in the dLAN AVpro manager at a later point, the adapter has to first be unplugged and plugged back in.

3.4 Connecting the dLAN 200 AVpro mini

This section describes how to connect your dLAN 200 AVpro mini to a computer or other network device.

① Use the included network cable to connect the dLAN 200 AVpro mini to the network port of your running computer or other network device.

② Plug the dLAN 200 AVpro mini into a free electrical outlet.

Please note that all dLAN AV devices to be connected to your network are also connected to your household electrical wiring.

③ As soon as at least one other dLAN AVpro adapter has been connected and plugged into the mains supply, a dLAN network is set up. You can use the devolo dLAN AVpro manager, the encryption button to secure your dLAN network from unauthorised access. For information on how to proceed, please read further in Chapter **4 dLAN network**.

For detailed information about connecting other devolo dLAN adapters, visit our website: www.devolo.com

3.4.1 Software for Windows

The installation wizard installs the devolo dLAN AVpro manager and the associated manual on the Windows operating system.

- In addition to the individual encryption of your dLAN network, **devolo dLAN AVpro manager** offers other expanded dLAN functions.

To install the software, insert the included CD-ROM in the CD drive of your computer.

During the installation process, you will be given the choice of installing all software components ('Standard installation') or selecting individual ones ('Custom installation').

Then you will find the installed devolo dLAN AVpro manager and the corresponding manual in the program group **Start ▷ All Programs ▷ devolo**.

4 dLAN network

4.1 Security in the dLAN

Before you can use the dLAN 200 AVpro mini in your dLAN network, first you have to connect it to other dLAN AVpro devices as a home network. Two specific pieces of information are especially important for this:

- Shared use of a dLAN password results in a delimited dLAN network.
- Shared use of the dLAN password serves as access control to the dLAN network as well as the encryption, and thereby the interception protection, of the transmitted data.

The dLAN password can be specified automatically via the **encryption button** or manually using the **dLAN AVpro manager** program. Please note the following basic principle when choosing your encryption method:

- In dLAN networks, data encryption is as **simple as touching a button**, since **all corresponding dLAN AVpro devices are equipped with an encryption button**.
- For dLAN networks that include devices **with and without encryption buttons**, data encryption must be set up using the **dLAN AVpro manager**.

4.2 dLAN network encryption at the touch of a button

To encrypt a dLAN network, in which all associated devices are equipped with an encryption button, simply press the encryption button that is located on the device. Pressing this button will encrypt your dLAN network with a randomly generated password.

For security reasons, you can deactivate encryption button in the dLAN AVpro manager software.

The following section contains exact instructions of encryption on the basis of possible network scenarios:

Adapters cannot be configured while in Standby mode.

Encrypting a new dLAN network with a dLAN 200 AVpro mini and an additional dLAN AVpro device (Fig. 8)

Once both dLAN AVpro devices have been successfully connected, press each encryption button for >one second within two minutes of one another.

That's it! Your dLAN network is now protected against unauthorised access.

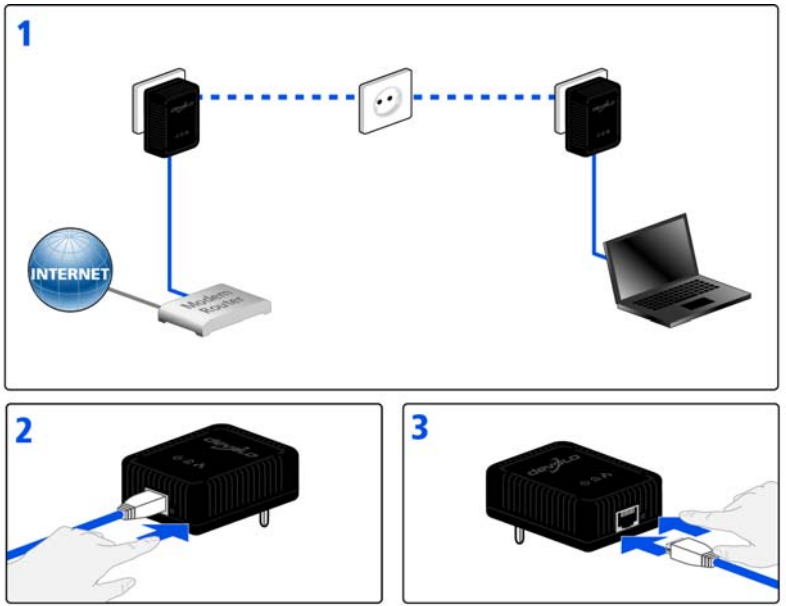


Fig. 8

Expanding an existing dLAN network by adding another dLAN AVpro device (Fig. 9)

If you have already secured your existing dLAN network using the encryption button, use the same method to integrate further adapters. Once you have successfully connected the new dLAN AVpro adapter, first press the encryption button (> one second) of one of your network's existing adapters, then press the encryption button (> one second) of your new dLAN AVpro adapter within two minutes.

That's it! The new dLAN AVpro adapter is now integrated in your network. To integrate additional dLAN AVpro adapters in your network, repeat the above steps.

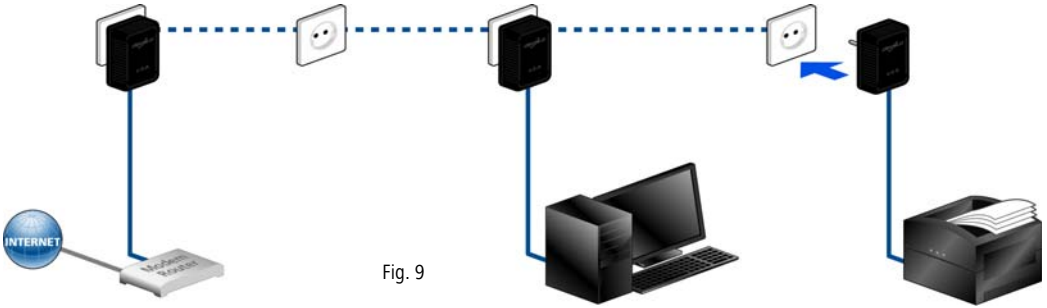


Fig. 9

Removing a dLAN AVpro device from a network (Fig. 10)

To remove a dLAN 200 AVpro mini or another dLAN AVpro device from an existing network, press its encryption button for at least ten seconds. The device will be assigned a new randomly generated password and will thus no longer be able to access the network.

To integrate the device into a different dLAN network, follow the steps described above, depending on whether you are setting up a new network or adding the adapter to an existing one.

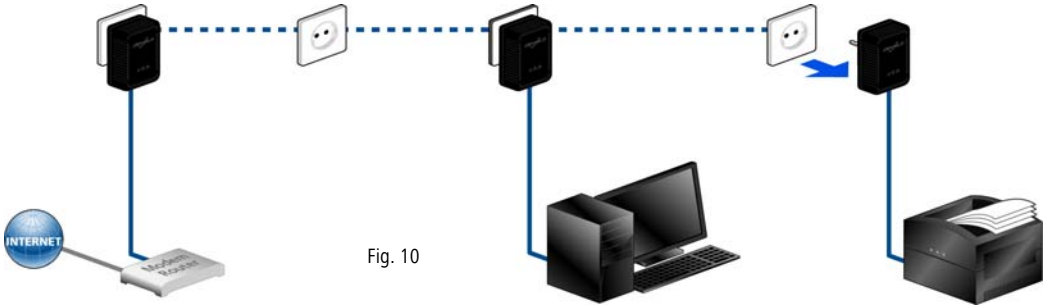


Fig. 10

4.3 dLAN AVpro manager for Windows

The installation wizard installs the devolo dLAN AVpro manager configuration software as well as the associated manual on the Windows operating system (see **3.4.1 Software for Windows**).

In addition to the individual encryption of your dLAN network and the security from unauthorised access, **devolo dLAN AVpro manager** offers other expanded dLAN functions.

For detailed descriptions and information on configuration of your dLAN network please consult this devolo dLAN AVpro manager manual.

5 Appendix

5.1 Bandwidth optimization

We recommend observing the following connection rules to eliminate possible sources of interference:

- Avoid extension strips. This may impair the transmission of the dLAN signals. Free wall outlets are preferable.
- Plug the devices into different outlets and avoid using the same extension strip.

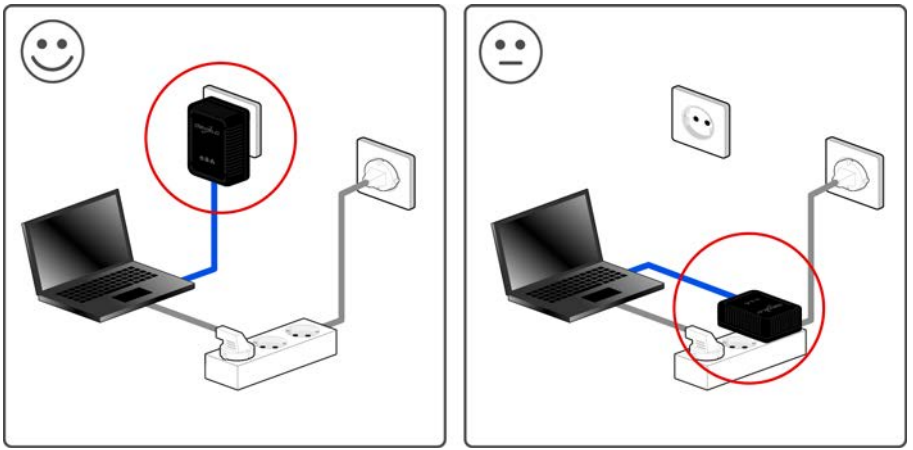


Fig. 11

5.2 Important safety instructions

All safety and operating instructions should be read and understood before using the device, and should be kept for future reference.

- Never open the device. There are no user-serviceable parts inside the device.

Do not try to service this product yourself! Contact qualified technicians each and every time your device needs maintenance. There is a risk of electric shock!

- Use the device in a dry location only.
- Always use the included network cable to connect the device.

The outlet must be within reach of the connected network devices. The adapter and the network devices must be easily accessible.

- To switch the device off, pull the power plug.
- To disconnect the device from the power supply grid, pull the power plug.
- Do not insert any objects into the openings of the device.
- Do not keep the device in direct sunlight.
- Slots and openings on the case serve as ventilation. Never block or cover them.
- Never set up the device near a heater or radiator.
- The device should be located only where sufficient ventilation can be ensured.
- Disconnect the device from the power supply grid before cleaning. Use a moist towel to clean the device. Never use water, paint thinner, benzene, alcohol or other strong cleaning agents when cleaning the device, as these could damage the case.
- Never use the device with a power supply that does not meet the specifications provided on the rating plate. If you do not know what type of power supply you have at home, contact your dealer or energy supplier.
- In the event of damage, disconnect the device from the power supply grid and contact customer service. This applies, for example, if
  - the power cable or plug is damaged.
  - liquid has been spilled on the device or objects have fallen into the device.
  - the device has been exposed to rain or water.
  - the device does not work, even though the operating instructions have been followed properly.

- the device's case is damaged.

5.3 Disposal of old devices

To be used in the countries of the European Union and other European countries with a separate collecting system:

The icon with crossed-out wastebasket on the device means that this adapter is an electrical or electronic device that falls within the scope of application of the German Electrical and Electronic Equipment Act ("Elektrogesetz"). Since 24 March 2006, these types of devices may no longer be disposed of with household waste. Rather, in Germany, they can be given to a municipal collection point free of charge. Contact your municipal government to find out the address and hours of the nearest collection point.

5.4 Warranty conditions

The devolo AG warranty is given to purchasers of devolo products in addition to the warranty conditions provided by law and in accordance with the following conditions:

1 Warranty coverage

a) The warranty covers the equipment delivered and all its parts. Parts will, at devolo's sole discretion, be replaced or repaired free of charge if, despite proven proper handling and adherence to the operating instructions, these parts became defective due to fabrication and/or material defects. Alternatively, devolo reserves the right to replace the defective product with a comparable product with the same specifications and features. Operating manuals and possibly supplied software are excluded from the warranty.

b) Material and service charges shall be covered by devolo, but not shipping and handling costs involved in transport from the buyer to the service station and/or to devolo.

c) Replaced parts become property of devolo.

d) devolo is authorized to carry out technical changes (e.g. firmware updates) beyond repair and replacement of defective parts in order to bring the equipment up to the current technical state. This does not result in any additional charge for the customer. A legal claim to this service does not exist.

2 Warranty period

The warranty period for this devolo product is three years. This period begins at the day of delivery from the devolo dealer. Warranty services carried out by devolo do not result in an extension of the warranty period nor do they initiate a new warranty period. The warranty period for installed replacement parts ends with the warranty period of the device as a whole.

3 Warranty procedure

a) If defects appear during the warranty period, the warranty claims must be made immediately, at the latest within a period of 7 days.

b) In the case of any externally visible damage arising from transport (e.g. damage to the housing), the person carrying out the transportation and the sender should be informed immediately. On discovery of damage which is not externally visible, the transport company and the sender are to be immediately informed in writing, at the latest within 3 days of delivery.

c) Transport to and from the location where the warranty claim is accepted and/or the repaired device is exchanged, is at the purchaser's own risk and cost.

d) Warranty claims are only valid if a copy of the original purchase receipt is returned with the device. devolo reserves the right to require the submission of the original purchase receipt.

4 Suspension of the warranty

All warranty claims will be deemed invalid

a) if the label with the serial number has been removed from the device,

b) if the device is damaged or destroyed as a result of acts of nature or by environmental influences (moisture, electric shock, dust, etc.),

c) if the device was stored or operated under conditions not in compliance with the technical specifications,

d) if the damage occurred due to incorrect handling, especially to non-observance of the system description and the operating instructions,

e) if the device was opened, repaired or modified by persons not contracted by devolo,

f) if the device shows any kind of mechanical damage, or

g) if the warranty claim has not been reported in accordance with 3a) or 3b).

5 Operating mistakes

If it becomes apparent that the reported malfunction of the device has been caused by unsuitable hardware, software, installation or operation, devolo reserves the right to charge the purchaser for the resulting testing costs.

6 Additional regulations

The above conditions define the complete scope of devolo's legal liability.

a) The warranty gives no entitlement to additional claims, such as any refund in full or in part. Compensation claims, regardless of the legal basis, are excluded. This does not apply if e.g. injury to persons or damage to private property are specifically covered by the product liability law, or in cases of intentional act or culpable negligence.

b) Claims for compensation of lost profits, indirect or consequential detriments, are excluded.

c) devolo is not liable for lost data or retrieval of lost data in cases of slight and ordinary negligence.

d) In the case that the intentional or culpable negligence of devolo employees has caused a loss of data, devolo will be liable for those costs typical to the recovery of data where periodic security data back-ups have been made.

e) The warranty is valid only for the first purchaser and is not transferable.

f) The court of jurisdiction is located in Aachen, Germany in the case that the purchaser is a merchant. If the purchaser does not have a court of jurisdiction in the Federal Republic of Germany or if he moves his domicile out of Germany after conclusion of the contract, devolo's court of jurisdiction applies. This is also applicable if the purchaser's domicile is not known at the time of institution of proceedings.

g) The law of the Federal Republic of Germany is applicable. The UN commercial law does not apply to dealings between devolo and the purchaser.

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